

WHAT IS CLAIMED IS:

1. A method of calibrating glucose monitor data, the method comprising the steps of:  
obtaining glucose monitor data at predetermined intervals over a period of time;  
obtaining at least two reference glucose values from a reference source that correspond  
5 with the glucose monitor data obtained at the predetermined intervals;  
calculating calibration characteristics using the at least two reference values and the  
corresponding glucose monitor data to regress the obtained glucose monitor data; and  
calibrating the obtained glucose monitor data using the calibration characteristics.
- 10 2. The method of claim 1, wherein the reference source is a blood glucose meter, and  
wherein the at least two reference glucose values are obtained from blood tests.
3. The method of claim 1, wherein the calculation of the calibration characteristics is  
obtained using linear regression.
- 15 4. The method of claim 3, wherein the linear regression is least squares linear regression.
5. The method of claim 1, wherein the calculation of the calibration characteristics is  
obtained using non-linear regression.
- 20 6. The method of claim 1, wherein the calculation of the calibration characteristics is  
obtained using a non-regression technique.
7. The method of claim 1, wherein the predetermined period of time is a 24 hour period.
- 25 8. The method of claim 1, wherein the predetermined intervals are 5 minute intervals.

91 15. The method of claim 13, wherein the at least one blood glucose reference reading is at least two blood glucose reference readings.

5 16. The method of claim 15, wherein a calculation of the calibration factor is obtained using linear regression.

17. The method of claim 16, wherein the linear regression is least squares linear regression.

10 18. The method of claim 13, wherein a calculation of the calibration factor is obtained using non-linear regression.

19. The method of claim 13, wherein a calculation of the calibration factor is obtained using a non-regression technique.

20. The method of claim 15, wherein the calibration factor is applied to glucose monitor data obtained before the last of the at least one blood glucose reference reading from a blood glucose measuring device that corresponds with at least one glucose monitor data point obtained at the predetermined memory storage rate used to calculate the calibration factor.

21. The method of claim 13, wherein the calibration factor is applied to glucose monitor data obtained after a last at least one blood glucose reference reading from a blood glucose measuring device that corresponds with at least one glucose monitor data point obtained at the predetermined memory storage rate used to calculate the calibration factor.

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22. The method of claim 13, wherein the predetermined memory storage rate is once every 5 minutes.

23. The method of claim 13, wherein the glucose monitor data that is obtained at a predetermined memory storage rate is the result of utilizing at least 2 sample values sampled from a glucose sensor at a rate faster than the memory storage rate.

24. The method of claim 13, wherein at least one blood glucose reference reading from a blood glucose measuring device is obtained during a predetermined calibration period, and wherein a calibration factor is calculated using at least one blood glucose reference reading from a blood glucose measuring device after every predetermined calibration period.

25. ~~The method of claim 24, wherein predetermined calibration period is a 24 hours.~~

26. The method of claim 13, wherein one or more calculations for calculating a first calibration factor is different than one or more calculations for calculating subsequent calibration factors.

27. The method of claim 26, wherein the calculation for calculating a first calibration factor uses a single-point calibration equation.

28. The method of claim 27, wherein the single-point calibration equation includes an offset value.

29. The method of claim 27, wherein the calculation for calculating the subsequent calibration factors uses a linear regression calibration equation.

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~~30.~~ The method of claim <sup>13</sup>~~27~~, wherein the calculation for calculating the subsequent calibration factors uses a non-linear regression calibration equation.

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~~31.~~ The method of claim <sup>13</sup>~~27~~, wherein the calculation for calculating the subsequent calibration factors uses a non-regression calibration equation.

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~~32.~~ The method of claim <sup>1</sup>~~13~~, wherein a predetermined time shift is used to temporally correlate the at least one blood glucose reference reading from a blood glucose measuring device  
10 with the at least one glucose monitor data point obtained at the predetermined memory storage rate.

33. The method of claim 13, wherein the predetermined time shift is ten minutes.

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34. A method of calibrating glucose monitor data, the method comprising the steps of:  
obtaining glucose monitor data;  
obtaining from another blood glucose measuring device at least one blood glucose  
reference reading that is temporally associated with at least one glucose monitor data reading;  
determining a calibration equation using the at least one blood glucose reference reading  
20 and the corresponding at least one glucose monitor data reading; and  
calibrating the glucose monitor data using the calibration equation.

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 35. A method of calibrating characteristic monitor data, the method comprising the steps of:  
 obtaining characteristic monitor data;  
 obtaining from another characteristic measuring device at least one characteristic  
 reference reading that is temporally associated with at least one characteristic monitor data point;  
 5 calculating calibration characteristics using the at least one characteristic reference  
 reading and the corresponding at least one characteristic monitor data point; and  
 calibrating the obtained characteristic monitor data using the calibration characteristics.

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 36. A method of claim 35, wherein the at least one characteristic reference reading is at least  
 10 two characteristic reference readings.

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 37. A method of claim 36, wherein a calculation for calculating the calibration characteristics  
 is a linear regression calculation.

15 38. An apparatus for calibrating glucose monitor data, the apparatus comprising:  
 a glucose monitor including a glucose monitor memory for storing glucose monitor data;  
 a glucose sensor electronically coupled to the glucose monitor to supply the glucose  
 monitor data to the glucose monitor memory;  
 a blood glucose measuring device that provides at least one blood glucose reference  
 20 reading that is temporally associated with at least one glucose monitor data point in the glucose  
 monitor memory; and  
 a processor including software to calculate calibration characteristics using the at least  
 one blood glucose reference reading that is temporally associated with at least one glucose  
 monitor data point and wherein the processor applies the calibration characteristics to the glucose  
 25 monitor data.

9. The method of claim 1, wherein the method further comprises the step of shifting the data by a predetermined time factor.

5 10. The method of claim 9, wherein the predetermined time factor is ten minutes.

11. The method of claim 1, wherein the calibration is performed while obtaining the glucose monitor data.

10 12. The method of claim 1, wherein the calibration is performed on glucose monitor data that has been collected for post processing by another processing device.

13. A method of calibrating glucose monitor data, the method comprising the steps of:

obtaining glucose monitor data at a predetermined memory storage rate;

15 obtaining at least one blood glucose reference reading from a blood glucose measuring device that corresponds with at least one glucose monitor data point obtained at the predetermined memory storage rate;

calculating a calibration factor using the at least one blood glucose reference reading and the corresponding at least one glucose monitor data point; and

20 calibrating the obtained glucose monitor data using the calibration factor.

14. The method of claim 13, wherein after a first calibration factor is calculated, at least one previous calibration factor is used with the at least one blood glucose reference reading from a blood glucose measuring device that corresponds with at least one glucose monitor data point  
25 obtained since the at least one previous calibration factor was calculated, to calculate a new calibration factor.

39. An apparatus according to claim 38, wherein the glucose monitor includes the processor.

40. An apparatus according to claim 38, wherein the processor receives glucose monitor data from the glucose monitor.

41. An apparatus according to claim 38, wherein the at least one blood glucose reference reading is entered into the glucose monitor.

42. An apparatus to calibrate glucose monitor data, the apparatus comprising:

means for obtaining glucose monitor data;

means for obtaining from another blood glucose measuring device at least one blood glucose reference reading that is temporally associated with at least one glucose monitor data reading;

means for determining a calibration equation using the at least one blood glucose reference reading and the corresponding at least one glucose monitor data reading; and

means for calibrating the glucose monitor data using the calibration equation.